According to Dr. McCarrison, this would indicate that thyroid hyperplasia may result from disturbances at the tissue threshold which are not always controllable by iodine. In this respect they are in marked contrast to those disturbances which result from interference with proper absorption. So far as his investigations permit him to form an opinion, he considers that iodine initiates and maintains the normal cycle of the thyroid gland's activities. It is, so to say, the oil of the thyroid engine, but I do not regard the efficient working of the thyroid mechanism as a matter solely of lubrication, important though this may be.

It is, I believe, rare that any metabolic disorder, such as goitre, is due to a single cause. There is, as a rule, a multiplicity of factors involved; the thyroid gland cannot be considered apart from the rest of the body, nor iodine apart from other food constituents. The time has come when we must search more closely for causes of the thyroid gland's disorder in disturbances at the threshold of absorption in the intestine, at the threshold of utilization in the tissues, and in the cells and tissue plasma of the gland itself.

VIABILITY OF THE BACILLUS TYPHOSUS IN OYSTERS

DURING recent years there have been several outbreaks of typhoid fever which have been attributed to oyster-borne bacilli. As the result of these epidemics investigations have taken place on the viability of the *Bacillus typhosus* in sea water and the length of time this bacillus will remain viable under storage conditions. Stiles, *Bulletin 156*, U.S. Department of Agriculture, September 1912, reported the isolation of typhoid bacilli in two instances of seven and twenty-one days respectively after the removal of oysters from contaminated beds. Very recently the Bureau of Laboratories and Research of the Chicago Department of Health undertook experiments to determine the length of time required for the disappearance of typhoid bacilli from contaminated oysters under various conditions. After twenty-two days a test of the shell exteriors of the live oysters kept in an icebox was made. This examination disclosed that about 50,000 typhoid bacilli were present in 1 cc. of a pint of water used in washing the exterior of the shell. All oysters that were alive as shown by a tightly closed shell were trephined and careful aseptic tests made only on the interiors; bacilli were found in numbers up till the twenty-second day but not after that. The oysters by that time had soured.

The conclusions arrived at were that the longevity of the *Bacillus typhosus* in both shucked and shell oysters in storage varies with the temperature at which they are kept. The temperature best suited for the preservation of the oyster tends to prolong the life of the *Bacillus typhosus* in the oysters. There was no evidence of any bactericidal power or eliminative action against these bacilli observed in living shell oysters during dry storage at forty-five degrees Fahrenheit. The micro-organisms will survive for a longer period than the oyster.

ON GLACIER LASSITUDE*

IN a series of articles to be written by Dr. Leonard Hill and Dr. Argyll Campbell, of the National Institute for Medical Research, some interesting physiological problems of the Mount Everest expedition are to be discussed. The first one, is that of "glacier lassitude" which Major Hingston, the medical officer of

*The Lancet, May 2, 1925, p. 939.

the expedition, describes as follows: "A very distinct feature in the Mount Everest region is the pronounced glacier lassitude which develops over large tracts of ice. This was most marked on the Rongbuk glacier, especially when passing through a trough in the ice at an altitude of 20,000 feet. The trough itself was a remarkable feature, being girt on either side with walls of ice in many places rising into fantastic pinnacles and ornamented with pyramidal spires. In this trough members of the expedition were conscious of a peculiar sapping of energy, a weakness of the legs, and a disinclination to move. It was not a breathlessness due to exertion, but a definite loss of muscular power. One seemed to drag oneself along instead of going with the usual strength. The lassitude appeared immediately after stepping on to the glacier and was as quickly relieved on again reaching rock or morain. It was most noticeable in the absence of wind and in the middle of the day when the sun was strong. It was absent late in the evening and in the early morning. The cause of this lassitude is easily explained. The conditions requisite for its development are a sheet of ice, a hot sun and a still air. The lowest stratum of the atmosphere under these conditions becomes saturated with moisture but does not rise, owing to its chilling from contact with the ice. We did not notice that other atmospheric conditions had any special influence on these high altitude symptoms. Our experience in the Western Himalayas was to some extent explanatory. There on two occasions our party climbed the same peak to a height of 18,203 feet. During the first ascent the sky was clear, the air was free from moisture, and our disability was slight. On the second occasion the sky was dark, a storm seemed imminent, and the atmosphere felt heavy and damp. Our distress on this second occasion was acute. Every few paces found us gasping for breath. The same explanation applies to this as in the case of the glacier lassitude. The free evaporation of perspiration was checked, and as a consequence the high altitude symptoms were increased."

Major Hingston has shown by this account that a feeling of great lassitude is produced by overheating the body whilst at a high altitude. We know already that the ordinary discomfort due to overheating is accompanied by an increase in pulse rate. Unfortunately Major Hingston does not give the pulse rate of his comrades while suffering from this glacier lassitude. Drs. Leonard and Campbell write that most likely the combined effects of overheating and altitude caused the prostration by fatigue of the heart muscle, the heart having to pump blood to the skin for cooling as well as to the muscles for work. However, to determine this fact they made experiments on individuals placed in a laboratory room in which the conditions of the atmosphere at an altitude of 20,000 feet were imitated at a temperature of about twenty degrees Centigrade. The results of the experiments are thus summarized. "It may be concluded that glacier lassitude was due to the combined effects upon the heart, of overheating of the body, and of breathing oxygen at low tension; under such conditions the pulse rate becomes a good indicator of the distress of the heart. A pulse rate of 140 per minute must be considered the limit of safety in subjects under the conditions specified. The presence of moisture in the air does not interfere with the passage of oxygen through the lung epithelium, although it greatly influences the heart by the overheating of the body which takes place owing to the greatly reduced evaporation of fluid from its surface. The beneficial effects of breathing oxygen at high tension during exercise are considered to be due to the increased amount of oxygen in physical solution in the blood; a fact which under conditions of bodily stress they consider as probably of more importance than the degree of saturation with oxygen, of the hæmoglobin.